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T208 Series Tank Blanketing Vapor Recovery Regulators

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Figure 1. *Type T208 Tank Blanketing Vapor Recover Regulator*

WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or chemical contamination causing property damage and personal injury or death.

Fisher® Vapor Recovery regulators must be installed, operated, and maintained in accordance with federal, state and local codes, rules and regulations, and Emerson Process Management Regulator Technologies Inc. (Regulator Technologies) instructions.

If the regulator discharges process fluid or a leak develops in the system, service to the unit may be required. Failure to correct trouble could result in a hazardous condition.

Call a qualified service person to service the unit. Installation, operation and maintenance procedures performed by unqualified person may result in improper adjustment and unsafe operation. Either condition may result in equipment damage or personal injury. Only a qualified person shall install or service the T208 Series vapor recovery regulator.

Introduction

Scope of the Manual

This Instruction Manual provides instructions for installation, startup, maintenance and parts ordering information for the T208 Series vapor recovery regulators. Instructions and parts list for other equipment used with these regulators are found in separate manuals.

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Specifications

The Specifications section on this page provides the ratings and other specifications for the T208 Series. Factory specification such as type, maximum inlet pressure, maximum temperature, maximum outlet pressure, spring range and orifice size are stamped on the nameplate fastened on the regulator at the factory.

Product Configurations
Type T208: Tank Blanketing Vapor Recovery regulator with control pressure range of 2 inches w.c. to 7 psig / 5 mbar to 0.48 bar in six different spring ranges and has internal pressure registration requiring no control line.
Type T208M: Similar to Type T208 but has a blocked throat and a control line connection for external pressure registration.

Body Sizes and End Connection Styles
See Table 1

Maximum Allowable Inlet (Casing) Pressure(1)
See Table 1

Maximum Outlet Pressure(1)
35 psig / 2.4 bar

Maximum Emergency Inlet Pressure to Avoid Internal Parts Damage(1)
With Nitrile (NBR) or Fluorocarbon (FKM) diaphragm: 35 psig / 2.4 bar
With Fluorinated Ethylene Propylene (FEP) diaphragm: 10 psig / 0.69 bar

Control Pressure Ranges(1)
See Table 2

Shutoff Classification per ANSI/FCI 70-3-2004
Class VI (Soft Seat)

Pressure Registration
Type T208: Internal
Type T208M: External

Material Temperature Capabilities(1)(2)
Elastomer Parts
Nitrile (NBR): -40 to 180°F / -40 to 82°C
Fluorinated Ethylene Propylene (FEP): -20 to 180°F / -29 to 82°C
Fluorocarbon (FKM): 40 to 300°F / 4 to 149°C
Ethylene Propylene Diene (EPDM): -20 to 225°F / -29 to 107°C
Perfluoroelastomer (FFKM): 0 to 300°F / -18 to 149°C
Body Materials
Gray Cast Iron: -20 to 300°F / -29 to 149°C
WCC Carbon Steel: -20 to 300°F / -29 to 149°C
CF8M/CF3M Stainless Steel: -40 to 300°F / -40 to 149°C

Spring Case Vent Connection
1/4 NPT

Diaphragm Case Control Line Connection (Type T208M)
1/2 NPT

Approximate Weight
17.7 pounds / 8 kg

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.
2. See Table 4 for operating temperature ranges for available trim combinations.

Product Description

The T208 Series vapor recovery regulators are direct-operated. They are used to sense an increase in vessel pressure and vent excessive internal vessel pressure to an appropriate vapor recovery disposal or reclamation system. They may also be used as backpressure regulators or relief valves.

Type T208—The Type T208 has internal registration requiring no control line.

Type T208M—The Type T208M has a blocked throat and a control line connection for external registration.

Principle of Operation

The T208 Series vapor recovery regulators are used to maintain a constant inlet (blanket) pressure with the outlet flowing to a system whose pressure is lower than that at the inlet. When vessel pressure increases above the setpoint of the regulator due to pumping in or thermal heating, the force of the control spring is overcome by pressure acting on the diaphragm. This moves the disk away from the orifice, allowing gas to flow from the vessel to the vapor recovery system. As vessel pressure is reduced, the force of the back disk spring causes the disk to move toward the orifice, decreasing the flow of gas out of the vessel. As vessel pressure drops below the setpoint of the regulator, the disk will seat against the orifice, shutting off the gas flow.

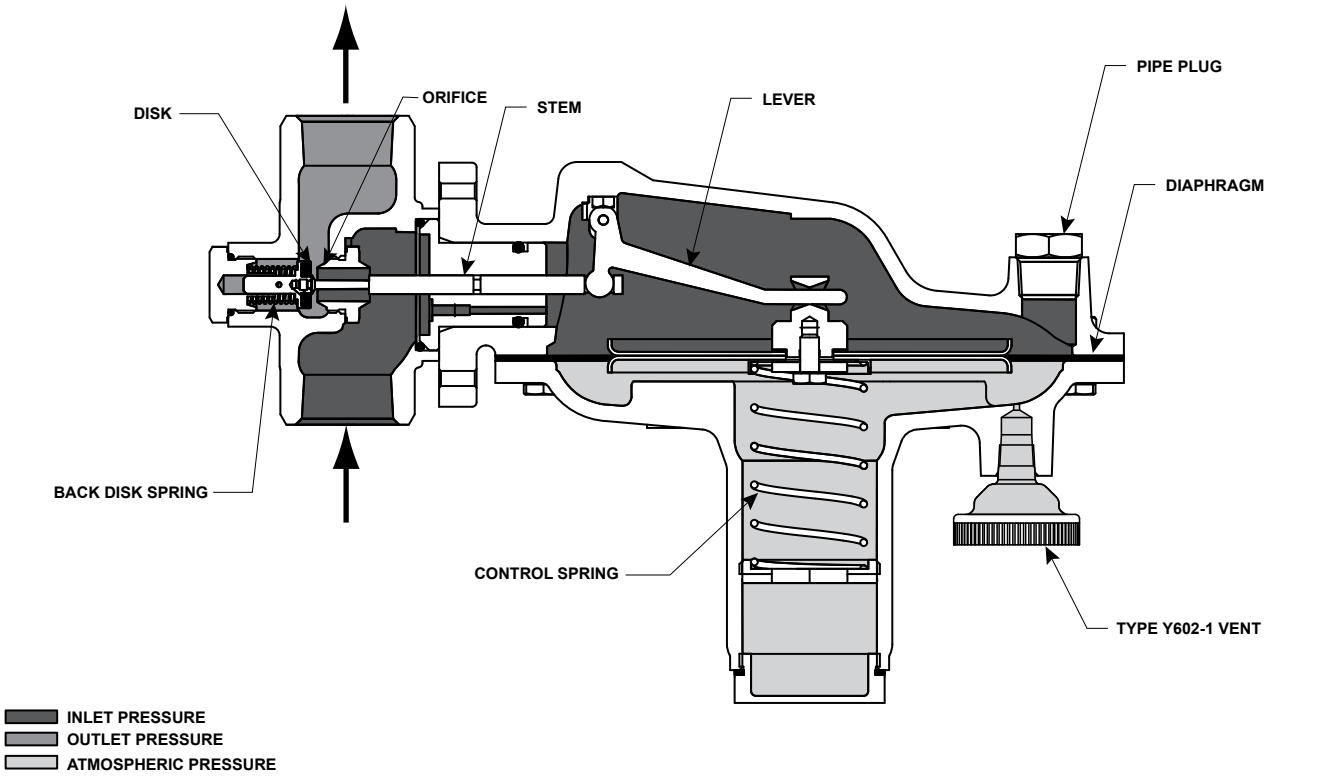


Figure 2. *Type T208 with Internal Registration Operational Schematics*

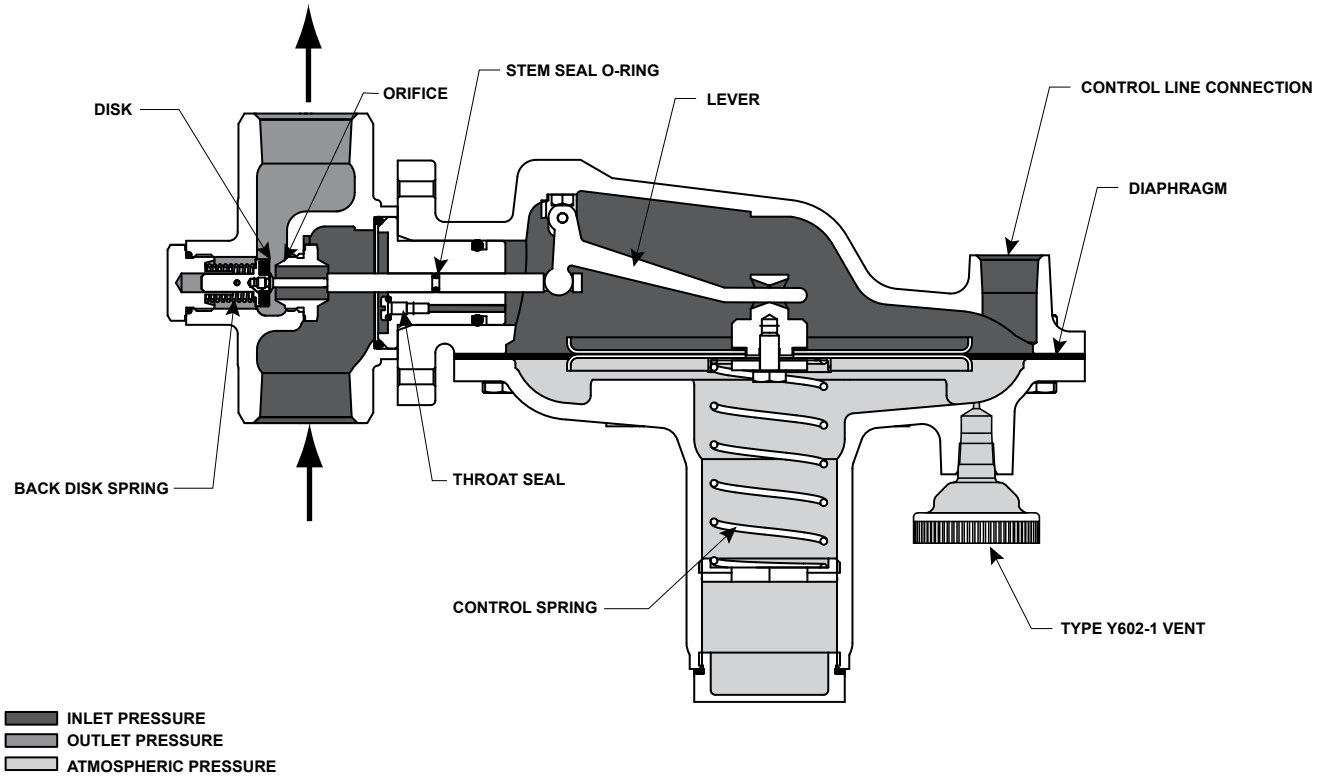


Figure 3. *Type T208M with External Registration Operational Schematics*

Table 1. *Body Sizes, End Connection Styles and Maximum Allowable Inlet (Casing) Pressures*

BODY SIZE		BODY MATERIAL	END CONNECTION STYLES[1]	MAXIMUM ALLOWABLE INLET (CASING) PRESSURE	
Inch	DN			psig	bar
3/4 or 1	20 or 25	Gray cast iron	NPT	35	2.4
		WCC Carbon steel	NPT, CL150 RF, CL300 RF, or PN 16/25/40 RF	75	5.2
		CF8M/CF3M Stainless steel[2]			

1. All flanges are welded. Weld-on flange dimension is 14 inches / 356 mm face-to-face.
2. Pipe nipples and flanges are 316 Stainless steel for flanged body assemblies.

Table 2. *Control Pressure Ranges and Spring Information*

CONTROL PRESSURE RANGE		SPRING PART NUMBER	SPRING COLOR	SPRING WIRE DIAMETER		SPRING FREE LENGTH	
Inch w.c.	mbar			Inch	mm	Inch	mm
2 to 7[1][2]	5 to 17[1][2]	1B653827052	Red	0.085	2.2	3.63	92.2
3 to 13[1][2]	7 to 32[1][2]	1B653927022	Unpainted	0.105	2.7	3.75	95.3
10 to 26	25 to 65	1B537027052	Yellow	0.114	2.9	4.31	109
0.9 to 2.5 psig	62 to 172	1B537127022	Green	0.156	4.0	4.06	103
1.3 to 4.5 psig	90 to 310	1B537227022	Light blue	0.187	4.8	3.94	100
3.8 to 7 psig	0.26 to 0.48 bar	1B537327052	Black	0.218	5.5	3.98	101

1. To achieve the published control pressure range, the spring case must be installed pointing down.
2. Do not use Fluorocarbon (FKM) diaphragm with this spring at diaphragm temperatures lower than 60°F / 16°C.

Installation

WARNING

Personal injury, property damage, equipment damage or leakage due to escaping gas or bursting of pressure-containing parts may result if this regulator is overpressured or installed where service conditions could exceed the limits given in the Specifications section (page 2) or where conditions exceed any ratings of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation or standard) to prevent service conditions from exceeding limits.

Additionally, physical damage to the regulator could cause personal injury or property damage due to escaping gas. To avoid such injury or damage, install the regulator in a safe location.

1. Only personnel qualified through training and experience shall install, operate and maintain a regulator. For a regulator that is shipped separately, make sure there is no damage to or debris in the regulator. Also ensure that all tubing and piping are clean and unobstructed.
2. Install the regulator using a straight run of pipe the same size or larger as the regulator body. Flow through the regulator body is indicated by the flow arrow attached to the body. If a block valve is required, install a full flow valve between the regulator and the blanketed vessel. For proper operation, the regulators should be installed with the spring case barrel pointed down. Key numbers referenced in this section are shown in Figures 4, 5 and 6.

WARNING

A regulator may vent some gas to the atmosphere. In hazardous or flammable gas service, vented gas may accumulate and cause personal injury, death or property damage due to fire or explosion. Vent a regulator in hazardous gas service to a remote, safe location away from air intakes or any hazardous area. The vent line or stack opening must be protected against condensation or clogging.

3. To keep the vent assembly (key 26) from being plugged or the spring case (key 3) from collecting moisture, corrosive chemicals or other foreign material, point the vent down or otherwise protect it. The diaphragm casing (key 4, Figure 6) may be rotated in order to obtain desired positioning.

4. To remotely vent the regulator, remove the vent assembly (key 26) and install obstruction-free tubing or piping into the 1/4 NPT vent tapping. Provide protection on a remote vent by installing a screened vent cap into the remote end of the vent pipe. If continuous operation of the system is required during inspection or maintenance, install a three-way bypass valve around the regulator.
5. The Type T208M requires a control line. Be sure to install the control line before putting the regulator into operation. Make the control line as short and straight as possible and do not install it in a location where flow may be turbulent. Significant restrictions in the control line can prevent proper pressure registration. When using a hand valve, it should be a full flow valve, such as a full port ball valve. Install the control line sloping downward toward the tank to prevent condensation buildup and avoid low points (or traps) that could catch liquid. The sensing line must enter the tank above the liquid level at a point that senses the vapor space pressure and is free from turbulence associated with tank nozzles or vents. The control line pipe should be at least 1/2-inch / 13 mm in diameter and increase 1 pipe size for every 10 feet / 3.05 m of control line, with setpoint less than 5-inches w.c / 12 mbar.
6. Vapor recovery regulators are used to maintain a constant inlet (blanket) pressure with the outlet flowing to a system whose pressure is lower than that at the inlet. The recovery regulators are not intended to be used as an ASME certified relief device for overpressure protection on a tank. They are to be used as part of a gas blanketing system to control outflow of blanketing gas under normal conditions and collect tank vapors for the vapor disposal reclamation system. Provide alternate methods of emergency overpressure protection.

Startup, Adjustment and Shutdown

Note

The Specifications section and Table 1 provide the maximum pressure capabilities for each regulator construction. Use pressure gauges to monitor inlet pressure and control pressure during startup.

Startup

1. Slowly open the outlet block valve, if used, to vapor recovery system and leave it fully open.
2. Slowly open the shutoff valve (for Type T208M, open the control line shutoff valve first followed by the inlet shutoff valve) between the tank and vapor recovery regulator.
3. Use gauges to monitor pressure.

Adjustment

WARNING

To avoid personal injury, property damage, or equipment damage caused by bursting of pressure containing parts or explosion of accumulated gas, never adjust the control spring to maintain a control pressure higher than the upper limit of the control pressure range for that particular spring. If the desired control pressure is not within the range of the spring, install a spring of the proper range according to the Diaphragm and Spring Case Area section of the maintenance procedure.

Adjust the regulator control pressure setting to meet the requirements of the specific application. The range of allowable pressure setting is stamped on the nameplate. If a pressure setting beyond the stamped range is required, install a spring with the desired range by following the procedures for changing the spring in the Maintenance section. To adjust the pressure setting, perform the following steps (key numbers are referenced in Figures 4, 5 and 6).

For internal flat circular adjusting screw

1. Remove the closing cap (key 22).
2. Use a 1-inch / 25 mm hex rod or flat screwdriver to turn the adjusting screw (key 35) either clockwise to increase control pressure or counterclockwise to decrease control pressure. The regulator will go into immediate operation. To ensure correct operation, always use a pressure gauge to monitor the vapor recovery pressure when making adjustments.
3. After making the adjustment, replace the closing cap gasket (key 25) and install the closing cap (key 22).

For external square head adjusting screw

1. Loosen the locknut (key 20).
2. Turn the adjusting screw (key 35) either clockwise to increase outlet pressure or counterclockwise to decrease outlet pressure. The regulator will go into immediate operation. To ensure correct operation, always use a pressure gauge to monitor the vapor recovery pressure when making adjustments.
3. After making the adjustment, tighten the locknut (key 20).

Shutdown

1. Close the nearest upstream shutoff valve.
2. Close the nearest downstream shutoff valve to vent the regulator properly.
3. Open the vent valve on both the upstream and downstream sides of the regulator. All pressure between these shutoff valves is released through the open vent valve. For a regulator with control line, close the valve in the control line and vent the diaphragm casing to the atmosphere.

Maintenance

Regulator parts are subject to normal wear and must be inspected and replaced as necessary. The frequency of inspection and replacement of parts depends upon the severity of service conditions or the requirements of local, state and federal regulations. Due to the care Regulator Technologies takes in meeting all manufacturing requirements (heat treating, dimensional tolerances, etc.), use only replacement parts manufactured or furnished by Regulator Technologies.

WARNING

To avoid personal injury, property damage or equipment damage caused by sudden release of pressure or explosion of accumulated gas, do not attempt any maintenance or disassembly without first isolating the regulator from system pressure and relieving all internal pressure from the regulator.

Regulators that have been disassembled for repair must be tested for proper operation before being returned to service. Only parts manufactured by Regulator Technologies should be used for repairing Fisher® regulators. Restart gas utilization equipment according to normal startup procedures.

General Maintenance

1. Visually inspect the regulator and its parts for any damage.
2. Ensure tight connections, tight seals and safe operation. If there is an evidence of leakage or unstable internal motion, a rebuild with seal replacement and relubrication may be necessary.
3. Observe the blanketing pressure.
4. Inspect the inlet pressure for the proper pressure (stamped on the regulator nameplate).

Body Area

Perform the following procedure to gain access to the disk assembly, orifice and body seal O-ring. Release all pressure from the regulator before performing the following steps. Key numbers are referenced in Figures 4, 5 and 6.

1. To inspect and replace the disk assembly (key 13), remove the back body cap (key 43).
2. Remove the disk assembly (key 13) from the disk spacer (key 44) and replace if necessary.
3. To inspect the orifice (key 5) on Types T208 and T208M or throat seal O-ring (key 31) and machine screw (key 34) on the Type T208M, remove the cap screws (key 2) and separate the diaphragm casing (key 4) from the body (key 1).
4. Remove and inspect the body seal O-ring (key 11) and the backup ring (key 49). Replace if damaged.
5. For a Type T208M, inspect the throat seal O-ring (key 31) by removing the machine screw (key 34). Replace if necessary. To install a throat seal, place the throat seal O-ring on the machine screw and thread into guide insert (key 18) to seal.
6. Inspect and replace the orifice (key 5) if necessary. Lightly lubricate the threads of the replacement orifice with a good quality lubricant and install with 340 to 470 inch-pounds / 38.5 to 53.1 N•m of torque.
7. Place back-up ring (key 49) into the body (key 1). Then place the body seal O-ring (key 11) into the body.

Note

In the following steps, be sure to install the spring case barrel pointed down as shown in Figure 1.

8. Place the diaphragm casing (key 4) on the body (key 1). Secure the diaphragm casing to the body with the cap screws (key 2) using 90 to 126 inch-pounds / 10.2 to 14.2 N•m of torque.
9. Secure the disk assembly (key 13) to the disk spacer (key 44). Place the back disk spring (key 41) and a new back body seal O-ring (key 42) on the back body cap (key 43).
10. Lightly lubricate the threads when replacing the body cap assembly. Use 340 to 470 inch-pounds / 38.5 to 53.1 N•m of torque.

Diaphragm and Spring Case Area

Perform the following procedure to gain access to the spring, diaphragm, lever assembly and stem. Release all pressure from the diaphragm casing before performing the following steps. Key numbers are referenced in Figures 4, 5 and 6.

To Change the Control Spring

For internal flat circular adjusting screw

1. Remove the closing cap (key 22) and closing cap gasket (key 25). Turn the adjusting screw (key 35) counterclockwise to remove all the compression from the control spring (key 6).
2. Remove the adjusting screw (key 35) and change the control spring (key 6) to match the desired spring range.
3. Install the adjusting screw (key 35).
4. Adjust the outlet pressure to the desired control pressure setting, refer to steps 2 and 3 of Adjustment section.
5. Change the stamped spring range on the spring case nameplate.

For external square head adjusting screw

1. Loosen the locknut (key 20) and turn the adjusting screw (key 35) counterclockwise to remove all the compression from the control spring (key 6).
2. Remove the adjusting screw (key 35), locknut (key 20), closing cap (key 22), closing cap gasket (key 25) and upper spring seat (key 19).
3. Take out the control spring (key 6) and replace with the desired spring.
4. Reinstall the upper spring seat (key 19), closing cap gasket (key 25), closing cap (key 22), locknut (key 20) and adjusting screw (key 35).
5. Adjust the outlet pressure to the desired control pressure setting, refer to steps 2 and 3 of Adjustment section.
6. Change the stamped spring range on the nameplate.

To Disassemble and Reassemble Diaphragm Parts

Use this procedure to gain access to the control spring, diaphragm assembly, valve stem and stem O-ring. All pressure must be released from the diaphragm case assembly before performing these steps. Key numbers are referenced in Figures 4, 5 and 6.

1. **For internal flat circular adjusting screw -** remove the closing cap (key 22), closing cap gasket (key 25) and adjusting screw (key 35). **For external square head adjusting screw -** remove the adjusting screw (key 35), locknut (key 20), closing cap (key 22), closing cap gasket (key 25) and upper spring seat (key 19).
2. Remove the hex nuts (key 23) and cap screws (key 24). Lift off the spring case (key 3) and remove the control spring (key 6).
3. Remove the diaphragm (key 10) plus attached parts by tilting them so that the pusher post (key 8) slips off the lever assembly (key 16). To separate the diaphragm assembly from the attached parts, unscrew the cap screw (key 38) from the pusher post. If the only maintenance is to replace the diaphragm components, skip to step 7.
4. To replace the lever assembly (key 16), remove the machine screws (key 17). To replace the stem (key 14) or stem seal O-ring (key 30), also perform Body Area Maintenance procedure steps 1 through 3 and pull the stem (key 14) out of the guide insert (key 18).
5. Install the stem (key 14) into the guide insert (key 18) and perform Body Area Maintenance procedure steps 7 through 10 as necessary.
6. Install the lever assembly (key 16) into the stem (key 14) and secure the lever assembly with the machine screws (key 17).
7. Reassemble the diaphragm parts as follows:
   - Pusher post (key 8)
   - Diaphragm head gasket (key 45)
   - Diaphragm head (key 7)
   - Diaphragm (key 10)
   - Diaphragm head
   - Lower spring seat (key 50)
   - Washer (key 36)

   Secure the parts with diaphragm plate cap screw (key 38) using 60 to 72 inch-pounds / 6.8 to 8.1 N•m of torque.

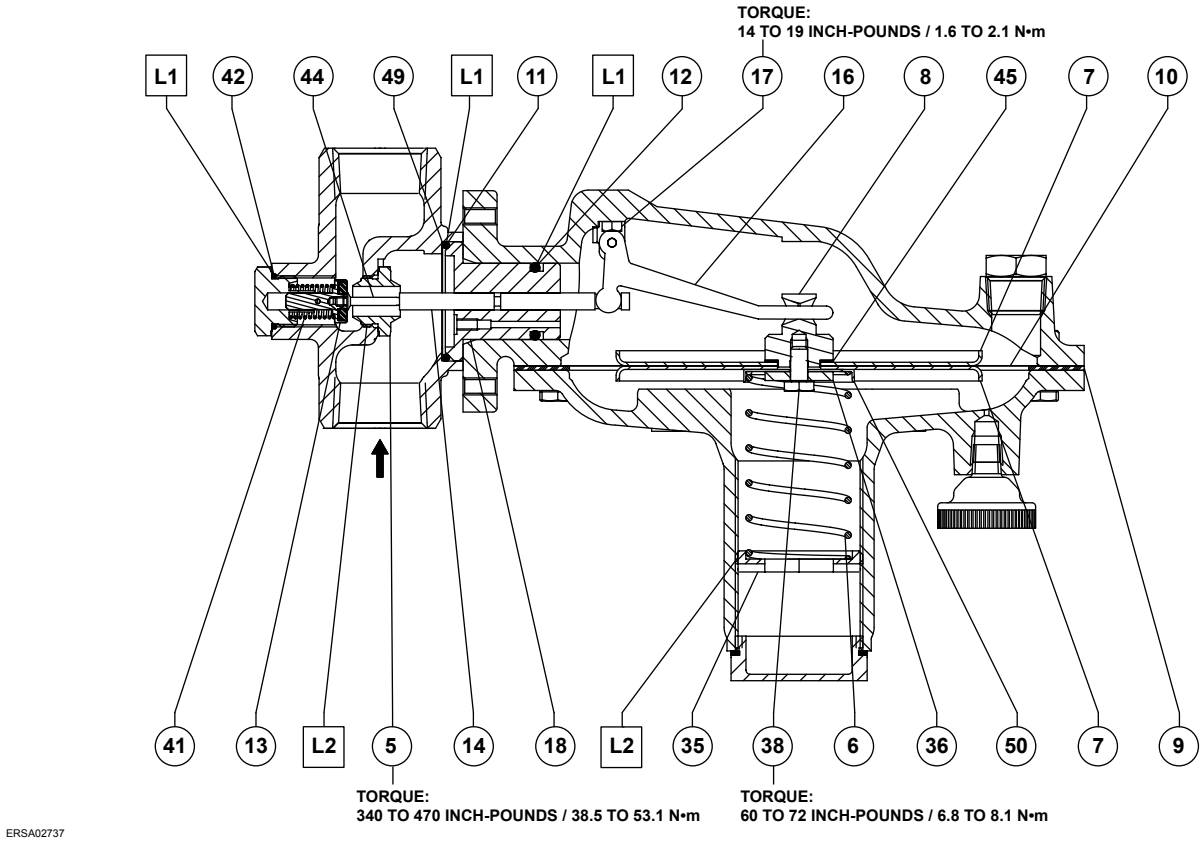
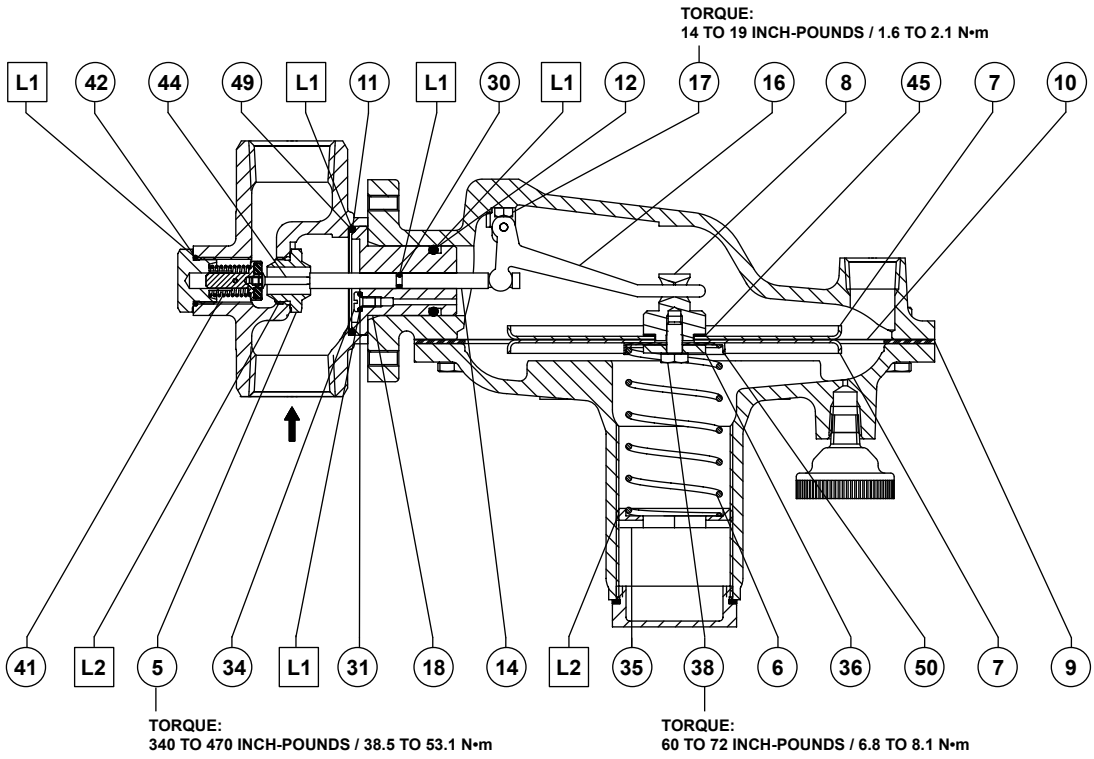


Figure 4. *Type T208 Section Drawing (Internal Registration)*

8. Install the pusher post (key 8) and attached diaphragm parts onto the lever assembly (key 16).
9. Install the spring case (key 3) on the lower casing (key 4) so that the vent assembly (key 26) is correctly oriented and secure them with the cap screws (key 24) and hex nuts (key 23) to finger tightness only.
10. Install the parts into the spring case (key 3). Follow the order below:
    For internal flat circular adjusting screw
    a. Control spring (key 6)
    b. Adjusting screw (key 35)
    For external square head adjusting screw
    a. Control spring (key 6)
    b. Upper spring seat (key 19)
    c. Closing cap gasket (key 25)
    d. Closing cap (key 22)
    e. Locknut (key 20)
    f. Adjusting screw (key 35)
11. Turn the adjusting screw (key 35) clockwise until there is enough control spring (key 6) force to provide proper slack to diaphragm (key 10). Using a crisscross pattern, finish tightening the cap screws (key 24) and hex nuts (key 23) to 90 to 126 inch-pounds / 10.2 to 14.2 N•m of torque. Adjust the control pressure to the desired pressure setting, refer to the Adjustment section.
12. For Type T208M, connect the control line. Refer to the Startup section before putting the regulator back in operation.



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☐ **APPLY LUBRICANT (L)[1]:**
L1 = SILICONE GREASE
L2 = ANTI-SEIZE COMPOUND

1. Lubricants must be selected such that they meet the temperature requirements.

Figure 5. *Type T208M Section Drawing (External Registration)*

To Convert Constructions

From Type T208 to Type T208M

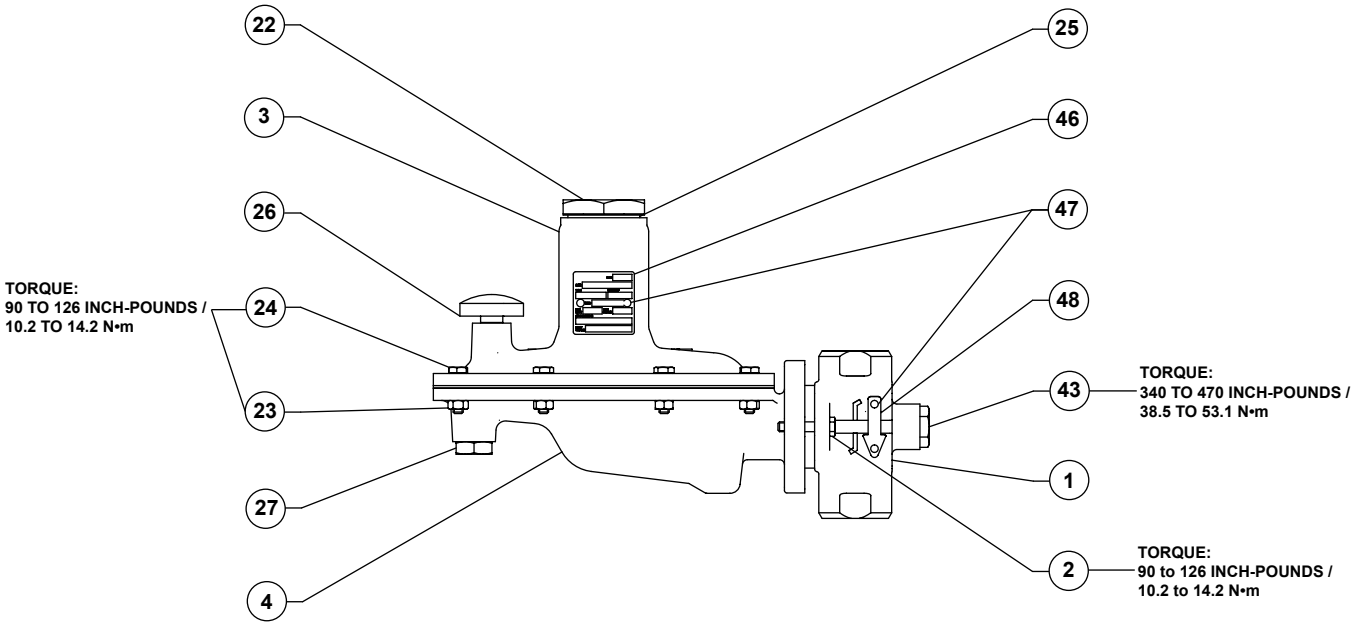
A control line is needed. New parts required: keys 30, 31 and 34. Key numbers are referenced in Figures 4, 5 and 6.

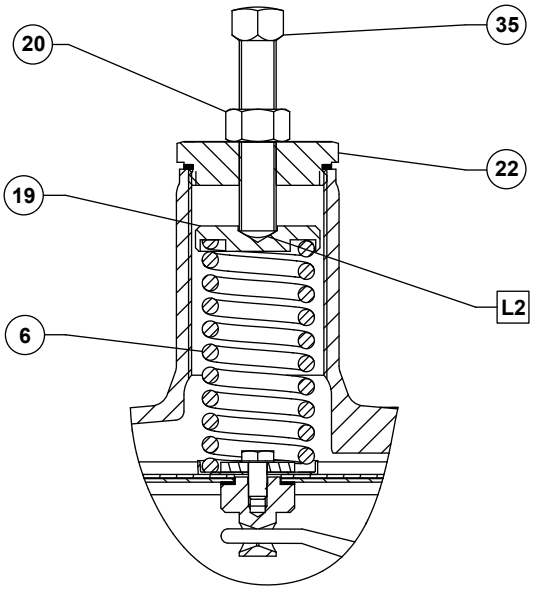
1. Remove pipe plug (key 27) from the diaphragm casing (key 4). Use this port to connect the control line from upstream. See item number 5 in the Installation section.
2. Refer to steps 1 through 3 in the Body Area Maintenance section.
3. Insert the throat seal O-ring (key 31) and machine screw (key 34).
4. Insert the stem seal O-ring (key 30) by following steps 1 through 6 and 8 through 11 in the “To Disassemble and Reassemble Diaphragm Part” under Diaphragm and Spring Case Area Maintenance section.
5. Reassemble following steps 7 through 10 of the Body Area Maintenance section.

From Type T208M to Type T208

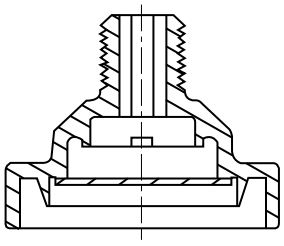
New part required: key 27. Key numbers are referenced in Figures 4, 5 and 6.

1. Insert pipe plug (key 27) in the diaphragm casing (key 4).
2. Follow steps 1 through 6 and 8 through 11 in the “To Disassemble and Reassemble Diaphragm Part” under Diaphragm and Spring Case Area Maintenance section to remove the stem O-ring (key 30).
3. Follow steps 1 through 5 of Body Area Maintenance to remove the throat seal O-ring (key 31) and machine screw (key 34).
4. Reassemble following steps 7 through 10 of Body Area Maintenance section.





EXTERNAL SQUARE HEAD ADJUSTING SCREW ASSEMBLY OPTION(2)



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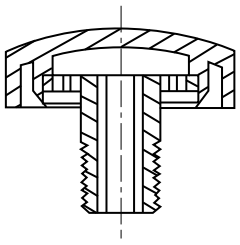
SPRING CASE DOWNWARD (STANDARD)

TYPE Y602-1 VENT



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SPRING CASE UPWARD

TYPE Y602-11 VENT

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☐ **APPLY LUBRICANT (L)(1):**
L2 = ANTI-SEIZE COMPOUND

1. Lubricant must be selected such that they meet the temperature requirements.
2. For 0.9 to 2.5 psig / 62 to 172 mbar, 1.3 to 4.5 psig / 90 to 310 mbar and 3.8 to 7 psig / 0.26 to 0.48 bar spring ranges only.

Figure 6. *Type T208 Assembly Drawing*

Parts Ordering

When corresponding with your local Sales Office about this regulator, include the type number and all other pertinent information stamped on the nameplate. Specify the 11-character part number when ordering new parts from the following parts list.

Parts List

Key	Description	Part Number
	Spare Parts Kit, included are keys 9, 10, 11, 12, 25, 42 and 45 (see Table 4 for Trim Option Codes)	
	Standard Trim	RT208XXDD12
	VV Trim	RT208XXVV12
	TN Trim	RT208XXTN12
	TV Trim	RT208XXTV12
	TK Trim	RT208XXTK12
	TE Trim	RT208XXTE12
1	Body	See Table 3
2	Cap Screw (2 required)	
	For Gray Cast Iron or WCC Carbon Steel Casing	1C856228992
	For CF8M/CF3M Stainless Steel Casing	18B3456X012
3	Spring Case	
	Gray Cast Iron	ERSA02558A0
	WCC Carbon Steel, NACE(2)	ERSA00195A1
	CF8M/CF3M Stainless Steel, NACE(2)	ERSA00195A0
4	Lower Casing	
	Gray Cast Iron	47B2271X012
	WCC Carbon Steel	ERSA00196A1
	CF8M/CF3M Stainless Steel, NACE(2)	ERSA00196A0
5*	Orifice, 7/16-inch / 11 mm	
	Stainless Steel	0L0832X0012
6	Spring	See Table 2
7	Diaphragm Head (2 required)	
	Stainless Steel	17B9723X032
8	Pusher Post	
	For Nitrile (NBR) or Fluorocarbon (FKM) Diaphragm	
	Stainless Steel, NACE(2)	18B3462X012
	For Fluorinated Ethylene Propylene (FEP) Diaphragm	
	Stainless Steel, NACE(2)	ERSA00876A0
9	Diaphragm Gasket, Nitrile (NBR)	
	(For Fluorinated Ethylene Propylene (FEP) Diaphragm)	ERSA00713A0
10*	Diaphragm	
	Nitrile (NBR)	17B9726X012
	Fluorocarbon (FKM)	23B0101X052
	Fluorinated Ethylene Propylene (FEP)	ERSA00193A0
11*	Body Seal O-ring	
	Nitrile (NBR)	1H993806992
	Fluorocarbon (FKM)	1H9938X0012
	Perfluoroelastomer (FFKM)	1H9938X0042
	Ethylene Propylene Diene (EPDM)	1H9938X0022
12*	Insert Seal O-ring	
	Nitrile (NBR)	1B885506992
	Fluorocarbon (FKM)	1B8855X0012
	Perfluoroelastomer (FFKM)	1B8855X0062
	Ethylene Propylene Diene (EPDM)	1B8855X0022
13*	Disk Assembly	
	Stainless Steel with	
	Nitrile (NBR)	ERSA01112A0
	Fluorocarbon (FKM)	ERSA01112A1
	Perfluoroelastomer (FFKM)	ERSA01112A2
	Ethylene Propylene Diene (EPDM)	ERSA01112A3
14	Stem, Stainless Steel	ERSA00200A0
16	Lever Assembly, Stainless Steel	1B5375000B2
17	Machine Screw (2 required)	
	Stainless Steel	19A7151X022
18	Guide Insert, Stainless Steel	27B4028X022
19	Upper spring seat(1), Steel	1J618124092
20	Lock Nut(1)	1A413224122
22	Closing Cap	
	Plastic **(standard)**	T11069X0012
	Steel	1E422724092
	Stainless Steel	1E422735072
	Carbon Steel(1)	ERSA01809A0
23	Hex Nut (8 required)	
	For Gray Cast Iron or WCC Carbon Steel Casing	1A345724122
	For CF8M/CF3M Stainless Steel Casing	1A3457K0012
24	Cap Screw (8 required)	
	For Gray Cast Iron or WCC Carbon Steel Casing	1A579724052
	For CF8M/CF3M Stainless Steel Casing	1A5797T0012
25*	Closing Cap Gasket, Neoprene (CR)	1P753306992
26	Vent Assembly	
	Spring Case Down (Type Y602-1) **(standard)**	17A6570X012
	Spring Case Up (Type Y602-11)	17A5515X012
27	Pipe Plug (Type T208 only) (not shown)	
	Carbon Steel **(standard)**	1A369224492
	Stainless Steel, NACE(2)	1A369235072
30*	Stem Seal O-ring (Type T208M only)	
	Nitrile (NBR)	1H2926G0012
	Fluorocarbon (FKM)	1H2926X0022
	Perfluoroelastomer (FFKM)	1H2926X0042
	Ethylene Propylene Diene (EPDM)	1H2926X0012
31*	Throat Seal O-ring (Type T208M only)	
	Nitrile (NBR)	1D682506992
	Fluorocarbon (FKM)	1D6825X0012
	Perfluoroelastomer (FFKM)	1D6825X0032
	Ethylene Propylene Diene (EPDM)	1D6825X0042
34	Machine Screw (Type T208M only)	
	Stainless Steel	18A0703X022
35	Adjusting Screw	
	Internal Flat Circular **(standard)**	1B537944012
	External Square Head(1)	
	For Green and Light blue spring	10B3080X012
	For Black spring	1D995448702
36	Washer, Plated Carbon Steel	18B3440X012
38	Cap Screw, Zinc-plated Steel	1B290524052
41	Back Disk Spring	
	Stainless Steel	1E984637022
	Inconel®, NACE(2)	18B0255X012
42*	Back Body Seal O-ring	
	Nitrile (NBR)	13A1584X012
	Fluorocarbon (FKM)	13A1584X022
	Perfluoroelastomer (FFKM)	13A1584X032
	Ethylene Propylene Diene (EPDM)	13A1584X042
43	Back Body Cap	
	Stainless Steel	1F2737X0012
44	Disk Spacer	
	Stainless Steel	ERSA00198A0
45*	Diaphragm Head Gasket, Composition	18B3450X012
46	Nameplate	- - - - - - - - - -
47	Drive screw, Stainless Steel (2 required)	1A368228982
48	Flow arrow	- - - - - - - - - -
49	Backup Ring, Stainless Steel	18B3446X012
50	Lower Spring Seat, Zinc-plated Steel	1B636325062
51	NACE Tag	- - - - - - - - - -
52	Tag Wire	- - - - - - - - - -

*Recommended Spare Part

1. Use for optional external square head adjusting screw assembly recommended for 0.9 to 2.5 psig / 62 to 172 mbar, 1.3 to 4.5 psig / 90 to 310 mbar and 3.8 to 7 psig / 0.26 to 0.48 bar spring ranges only.
2. NACE Standard MR0175-2002.

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Table 3. *Body Materials and Part Numbers (Body, key 1)*

BODY MATERIAL	END CONNECTION STYLE(1)	PART NUMBER	
		3/4-Inch / DN 20 Body	1-Inch / DN 25 Body
Gray Cast Iron	NPT	ERSA03695A0	ERSA03697A0
WCC Carbon Steel	NPT	ERSA00231A1	ERSA00764A1
	CL150 RF	ERSA01470A0	ERSA01470A1
	CL300 RF	ERSA01470A2	ERSA01470A3
	PN 16/25/40 RF	ERSA01470A4	ERSA01470A5
CF8M/CF3M Stainless Steel(3)	NPT(2)	ERSA00231A0	ERSA00764A0
	CL150 RF	ERSA01470A6	ERSA01470A7
	CL300 RF	ERSA01470A8	ERSA01470A9
	PN 16/25/40 RF	ERSA01470B0	ERSA01470B1

1. All flanges are welded. Weld-on flange dimension is 14 inches / 356 mm face-to-face.
2. NACE Standard MR0175-2002.
3. Pipe nipples and flanges are 316 Stainless steel for flanged body assemblies.

Table 4. *Type T208 Trim Option Code*

TRIM OPTION CODE	DIAPHRAGM MATERIAL	DISK AND O-RING MATERIAL	OPERATING TEMPERATURE RANGES
Standard	Nitrile (NBR)	Nitrile (NBR)	-40 to 180°F / -40 to 82°C
VV	Fluorocarbon (FKM)	Fluorocarbon (FKM)	40 to 300°F / 4 to 149°C
TN	Fluorinated Ethylene Propylene (FEP)	Nitrile (NBR)	-20 to 180°F / -29 to 82°C
TV	Fluorinated Ethylene Propylene (FEP)	Fluorocarbon (FKM)	40 to 180°F / 4 to 82°C
TK	Fluorinated Ethylene Propylene (FEP)	Perfluoroelastomer (FFKM)	0 to 180°F / -18 to 82°C
TE	Fluorinated Ethylene Propylene (FEP)	Ethylene Propylene Diene (EPDM)	-20 to 180°F / -29 to 82°C

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